

ZOOLOGY.—*Three new eastern millipeds of the family Xystodesmidae.*<sup>1</sup> RICHARD L. HOFFMAN, Miller School of Biology, University of Virginia. (Communicated by E. A. CHAPIN.)

Through the kindness of Drs. Edward A. Chapin, Waldo L. Schmitt, and Alexander Wetmore, I have been enabled to carry on extended work on the diplopod collection of the U. S. National Museum. During the course of identifying and arranging material, a number of undescribed species have been discovered. Three of these are described below, representing three genera of the large Holarctic family Xystodesmidae.

In one instance personal field work has resulted in the independent discovery of one of the new forms, and in this case my specimen has been designated holotype, since it is a fresh one and in better condition. It has been deposited in the National Museum collection.

Two of the species are of considerable interest from a systematic standpoint, and remarks on their relationships are included. A key to the known species of the genus *Tucoria*, based on males,<sup>2</sup> is also appended.

The figures illustrate the configuration of the left male gonopod, and are made from cephalic and mesial aspects following removal and orientation of the appendage. Setae have been removed in order to show basal structure.

*Aphelesia intermedia*, n. sp.

Figs. 1, 2

*Diagnosis.*—Male gonopod with lateral process produced upward in the manner of *Deltotaria*, lateral spine scarcely perceptible at end; mesial process low, rounded; blade of telopodite forming a loose curve, tip of blade not bent out of line with rest of the structure.

*Description of male holotype.*—Length 34, width 8.2 mm. Body rather slender, gently tapering caudad, more abruptly cephalad. Segments 4 through 14 of full width.

Collum large, almost semicircular in dorsal aspect, caudal margin almost straight (lateral portion swept slightly forward), cephalic margin rather evenly rounded and swept back. Marginal ridge perceptible on lateral extremities of collum.

Second and third segments with cephalolateral corners of keels widely rounded, marginal ridges well developed. Posterior edges of tergites straight except in being tapered forward on keels.

Segments 4 through 14 subsimilar, anterior corners rounded, slightly lobed cephalad; lateral margins of keels somewhat convex in dorsal aspect, marginal thickenings prominent, smooth. Posterior corners of keels not produced; caudal margins of keels but little caudad of rest of tergite across body. Dorsum well arched, keels not especially wide, but continuing slope of dorsum, particularly on the anterior half of the body. Repugnatorial pores dorsal in position.

Segments 15 through 19 with keels becoming increasingly produced caudad, those of nineteenth being small, somewhat angular lobes.

Anal segment triangular in dorsal aspect, somewhat longer than broad; distally truncate. Anal valves inflated, smooth, glabrous; mesial ridges conspicuous. Preanal scale semicircular, terminal lobe sharp, lateral tubercles small.

Bases of last pair of legs almost in contact. Sternites between other legs wide, those posterior to seventh pair of legs smooth and glabrous, not produced into lobes or spines. Trochanti and femora bearing large and sharp ventral spines. Distal tarsal joint equal in length to basal two, much shorter than femur. Legs bearing slender curved terminal claws.

Coxae of second legs of males with the usual cylindrical distally flattened seminal processes.

Gonopods large, protruding from large oval aperture; at rest retracted snugly against sternites and lying against one another, usually with the blades interlocked. Lateral process unusual for the genus, strongly produced upward suggesting the development found in the genus *Deltotaria*; basal spine represented by a slight acumen at the terminal end of the process; mesial process low, rounded, rather large, the cephalic margin very setiferous. Blade of telopodite highly arched, slightly compressed dorsoventrally toward the end; distal portion not bent either laterally or mesially.

<sup>1</sup> Received July 28, 1948.

Color in life not known, appearing to have been blackish with most if not all of the dorsal surface of keels yellow or red.

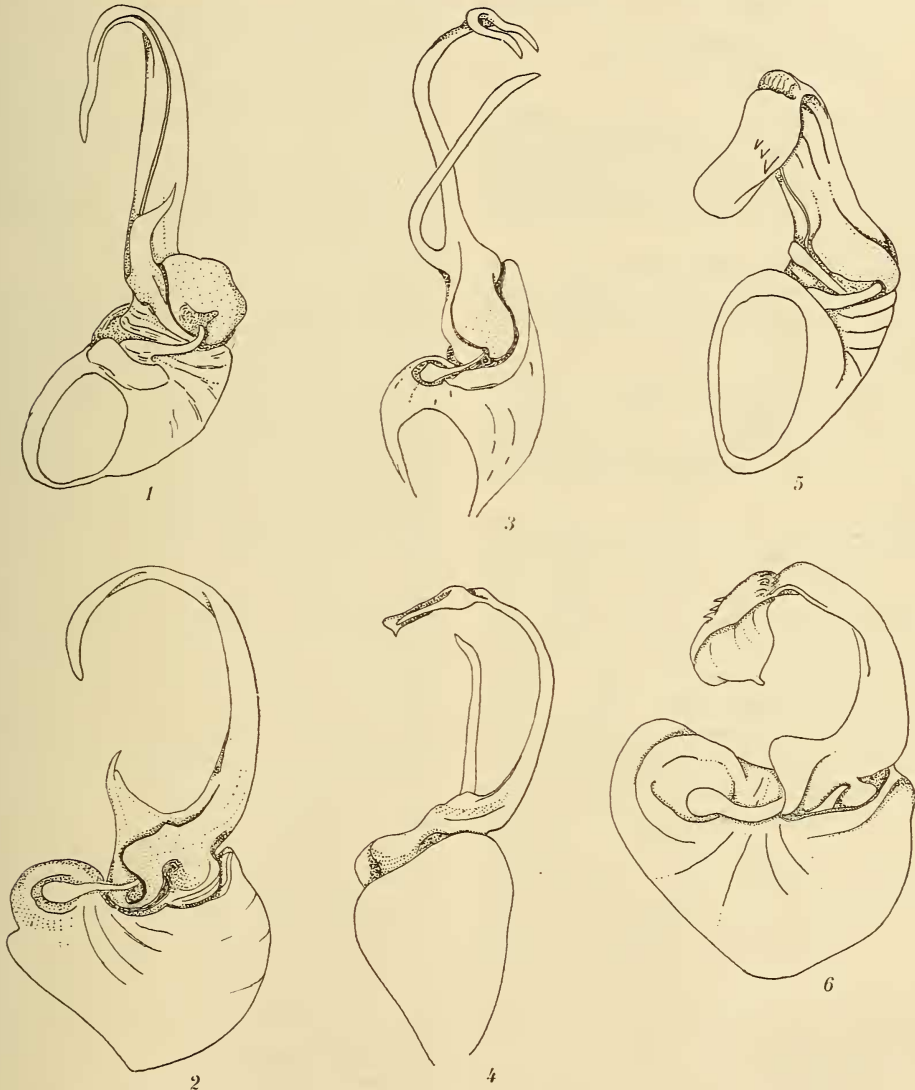
*Description of female allotype.*—Agreeing in most respects with the male. Differs as follows: Body more arched and compact; keels of segment 19 more rounded; femoral spines longer. Length 35, width 7.6 mm.

*Type locality.*—Asheville, Ashe County, N.C.

*Type specimens.*—Male holotype and female allotype, and a paratype of each sex in the

U. S. National Museum collection, no. 1833. These specimens were collected in August 1896, presumably by Dr. L. M. Underwood, of Syracuse University, although no collector is indicated on the label. Underwood collected many specimens in the Southeast during the summer of 1896.

*Remarks.*—The discovery of this strikingly disjunct form of *Apheloria* is of considerable importance. In addition to providing a link between the hitherto widely separated *coriacea*



FIGS. 1-6.—1, Cephalic view of left gonopod of male type, *Apheloria intermedia*, from Asheville, N. C.; 2, mesial view of same; 3, cephalic view of left gonopod of male paratype, *Nannaria morrisoni*, from Page County, Va.; 4, mesial view of same; 5, cephalic view of left gonopod of male type, *Tucoria viridicolens*, from Greensburg, Ky.; 6, mesial view of same. Pubescence has been removed from all structures figured.

and *trimaculata* sections of the genus (hence the specific name), *A. intermedia* seems to represent an ancestral stock from which the genera *Apheloria* and *Deltotaria* have been derived. It furthermore inhabits an area where one would expect just such a form to be found—western North Carolina, from whence many species of both genera have been described.

Detailed information on the relationships and phylogeny of this species is reserved for inclusion in a future publication treating the entire genus *Apheloria*.

***Nannaria morrisoni*, n. sp.**

Figs. 3, 4

*Diagnosis*.—Size small; processes between fourth pair of legs greatly developed; gonopods of male with main branch of telopodite distally bifurcated, and lateral branch long, flattened, and directed mesiad.

*Description of holotype*.—Length 21, width 4.1 mm. Body with sides subparallel, both ends abruptly tapering; segments 3 through 16 of full width.

Collum large, trapezoidal, almost as long as succeeding two segments; lateral marginal thickenings large; lateral extremities slightly rounded; posterior margin straight across body.

Segments 2 through 4 similar, dorsal marginal ridges large, posterior edges of keels swept forward, caudal margins of tergites slightly concave. Segments 5 through 15 subsimilar, anterior corners rounded, posterior corners right-angled or somewhat acutely angled, with a weakly indicated dentation; tergites about same width at edges of keels as at midline, and keels well separated, giving impression of evenly rectangular segments; segments 16 through 19 with keels becoming more produced caudad, those of segment 19 into subangular lobes about equal in length to one-half the distance between their bases. Dorsum not strongly arched, keels rather small, continuing slope of dorsum, the lateral edges directed cephaloventrad. Repugnatorial pores very small, not in a noticeable depression, on the ventral side of the edge of the keel.

Anal segment triangular in dorsal aspect, its sides concave, the usual subterminal lateral tubercles prominent, the tip more truncate than usual, directed ventrad. Anal valves subplane, finely wrinkled, the usual setiferous

tubercles not observed, mesial ridges very large. Preanal scale large, subtriangular, the median terminal lobe largest and well set off.

Bases of last pair of legs well separated. Legs of segments 8 through 18 subsimilar, sternites broad, glabrous, produced into conspicuous sharp lobes at bases of legs; coxae and trochanti unarmed, femoral spines large, becoming more elongated caudad. Those of last several pairs of legs as long as femora; tarsal joints with terminal as long as basal two, almost as long as femur, tarsal claw short, strongly curved at right angle to axis of legs.

Coxae of second pair of legs with the usual seminal projections, these unusual in becoming swollen distally; sternites between fourth pair of legs with two greatly developed lobes, these being as long as seminal projections but evenly tapered distad. Pregenital limbs hairy and lacking femoral armature, tarsal claws heavy, blunt.

Gonopods project from a large oval aperture, directed cephalad between bases of fifth pair of legs; *in situ* with the telopodite blades crossed at midline, the entire appendages twisted so that the small accessory branch is lowermost, in contact with the sternites. When in use the gonopods are forced out slightly and stand parallel to each other and perpendicular to the plane of the sternites, with the smaller branch lateral in position. Coxal joint of gonopod relatively undifferentiated, higher (longer) than broad; telopodite with a somewhat elongated basal portion, mesial process or shoulder large, heavily setiferous, merging into blade of the appendage; lateral process small, inconspicuous, much lower than mesial; a narrow groove between the two, extending distad; blade of telopodite long, slender, curved cephalad over base, distally bifurcated into a larger, lateral, apically mucronate branch and a smaller, spiniform, mesial one. A secondary division of the telopodite, arising from the lateral side of the basal portion is elongated, flattened slightly expanded distally, and bent mesiad from the base across the larger branch. For exact configuration of the gonopods, consult the accompanying figure.

Color in life as follows: tergites dark olive, suffused with black, a suggestion of a median dark line on the posterior part of the body; anterior and posterior corners of keels, lateral ends of collum, and distal half of anal segment

bright pink; top of head light brown to about level of antennal sockets, front of head, including sockets and first antennal segment very dilute brown; antennae mostly olive with last article dark gray in striking contrast. Underparts entirely whitish gray.

*Type locality*.—Saddle Hollow, about 3 miles west of Crozet, Albemarle County, Va., elevation about 2,000 feet, on the east side of the Blue Ridge. Dominant vegetation *Liriodendron tulipifera*, *Quercus* spp., and *Cercis canadensis*.

*Type specimens*.—Male holotype, U.S.N.M. no. 1834, collected on March 28, 1948, by the writer; two male paratypes collected in April 1936 by Drs. Irving Fox and J. P. E. Morrison, U.S.N.M. no. 1836.

*Remarks*.—The paratypes were collected along Skyline Drive, 4 miles north of Thornton Gap, Page County, Va., and still another locality is afforded by a female tentatively assigned to this form, collected on the Blue Ridge about 5 miles southeast of Charlestown, Jefferson County, W. Va. The range is thus seen to be restricted to the Blue Ridge Physiographic Province between the Potomac and James Rivers, but of course the species may be found elsewhere as well. The Blue Ridge in Virginia is occupied by several distinct, probably endemic, forms of animals, so that the addition of this milliped to the list is interesting but not surprising.

*Nannaria morrisoni* is so manifestly different from most of the other members of the genus, such as *media*, *minor*, *conservata*, *fowleri*, and *terricola*, that its inclusion in that genus may be questioned. I place it here for the following reasons: except for the greatly produced sternal processes *morrisoni* can be separated from other forms only by the small size and nature of the gonopods. These processes are present in other species as small lobes and probably will be found to vary in size in the different forms. As regards the gonopods, while they seem very disjunct, I am describing elsewhere a species from Mountain Lake, Va., which is perhaps intermediate between *morrisoni* and the other species. Judged from the material I have examined, and from species figured in the literature, *Nannaria* can be divided into several groups on the basis of the gonopods—one based on *media* and its relatives, one on *scutellaria*, and one to include *morrisoni* and the related

species mentioned above. Recognition of those groups as genera may become convenient when numerous species have been described in *Nannaria*. A thorough treatment of the genus is much needed, and in fact is contemplated, but must be preceded by extensive field work.

This species is named in honor of Dr. Joseph P. E. Morrison, of the U. S. National Museum, whose diligence and interest in securing myriapods incidentally to collection of land snails have enriched the Museum collection with much valuable material.

#### *Tucoria viridicolens*, n. sp

Figs. 5, 6

*Diagnosis*.—Size small for the genus; gonopods of the *splendida* type, apical process small, upper part of telopodite distad of constriction bearing three sharp teeth.

*Description of holotype*.—Body robust, length about 40 mm (specimen broken), width 9.3 mm; sides subparallel, segments 4 through 14 of full width; body tapering abruptly cephalad, very gradually caudad. Tergites well arched, keels wide, continuing slope of dorsum.

Collum crescentic in dorsal aspect, caudolateral edges tapering slightly cephalad; lateral marginal thickenings absent.

Segments 2, 3, and 4 similar, caudal margins of tergites straight, of keels swept forward, smoothly rounded; dorsal marginal thickenings present only on fourth, very obscure.

Segments 5 through 14 similar, caudal margins of keels produced slightly caudad, caudolateral corners of keels not produced into lobes; sides of keels smooth, rounded, somewhat convex; cephalolateral corners broadly rounded off. Dorsal marginal thickenings rather poorly developed, smooth; upper surface of keel finely granular, of dorsum slightly wrinkled.

Segments posterior to twelfth agree with those preceding, but with keels becoming increasingly produced caudad, and segments becoming narrower; keels of the nineteenth form short, bluntly triangular lobes.

Anal segment triangular in dorsal aspect, tip slightly truncated, two tiny subterminal lateral tubercles present. Anal valves slightly inflated, smooth, the setiferous tubercles almost obsolete; mesial ridges very prominent. Preanal scale broadly triangular.

Bases of last pair of legs separated. All sternites smooth, glabrous, very weakly pro-

duced into lobes at bases of legs, those posterior to gonopods broad, those between third, fourth, and fifth pairs of legs with conspicuous, low, pointed lobes. Coxae small, unarmed; trochanti weakly armed; femora with well developed spines. Terminal tarsal joint shorter than proximal two, but slightly longer than the unusually short femur.

Gonopods large, conspicuous, projecting cephalad and in contact mesially. Mesial process large, very setiferous, area immediately posterior on the mesial side trilobed; lateral process very small, not produced apically; blade of telopodite flat, curved forward over base, strongly constricted about one-third its length from distal end; terminal portion bent laterad, very flattened, a small apical projection, outer surface with three conspicuous sharp teeth in an oblique row. Configuration of gonopods as shown in the accompanying drawings.

Second pair of legs with the usual cylindrical distally truncate seminal lobes. Pregenital limbs hairy, without spines on the femora; tarsal claws short, heavy, blunt.

Color faded from long preservation, but appears to have been black or very dark brown in life with caudolateral halves of the keels orange or yellow.

*Type locality*.—Trace Creek, Greensburg, Green County, Ky.

*Type specimen*.—Male holotype, U.S.N.M.

no. 1835, collected by L. Garman on July 15 (no year given).

*Remarks*.—This species is the smallest member of the genus to be described so far. Its relationships seem to be clearly with *T. kentuckiana* and *T. splendida* rather than with *T. dynamia*.

Following is a key to the known species of *Tucoria*, based on males. Females of all of the species are not known, and the genitalia of the others not figured.

#### KEY TO SPECIES OF TUCORIA

1. Lateral process of male gonopod small, inconspicuous, not produced upward into any sort of spine or projection . . . . . 2  
     Lateral process of male gonopod larger, produced upward into a noticeable, occasionally sharp, projection . . . . . 3
2. Apical process on telopodite of gonopod small, simple; distal portion of telopodite with three denticles on outer side . . . . .  
     . . . . . *viridicolens*, n. sp.  
     Apical process larger, curved, slightly crenulate; distal portion of telopodite without denticles . . . . . *kentuckiana* (Causey)
3. Lateral process of gonopod produced into a broadly triangular spine; distal portion gently curved; dorsum black, trimaculate with yellow . . . . . *splendida* (Causey)  
     Lateral process of gonopod produced into an upright slender peg, distally slightly acuminate; distal portion of telopodite strongly recurved toward base, much expanded; dorsum with yellow cross bands . . . . .  
     . . . . . *dynamia* Chamberlin

ZOOLOGY.—*More about Mexican urocoptid mollusks*.<sup>1</sup> PAUL BARTSCH, U. S. National Museum.

The tireless efforts of Miss Marie E. Bourgeois in personally collecting mollusks and interesting her friends in this group have brought to light two species of urocops not heretofore known to science. These are here diagnosed. A detailed description of *Oligostylus hegewischi* is also made possible from topotypes that she collected.

#### *Oligostylus hegewischi* Bartsch

In my paper *Notes on some Mexican urocoptid mollusks, with the description of new species* in this JOURNAL.<sup>2</sup> I renamed *Bulimus truncatus*

Pfeiffer, 1841 (preoccupied by *Bulimus truncatus* Bruguière, 1792), calling it *Oligostylus? hegewischi*. No material from the type locality being available, I placed a query after the generic designation. I closed my remarks under that species with the statement: "It is to be hoped that Miss Bourgeois will rediscover it at Angangué." Miss Bourgeois took this to heart and paid a visit to Angangué, Michoacán, and secured a fine series of specimens of this species and donated a splendid lot (No. 488018) to the U. S. National Museum which makes it possible for me to confirm the statement made in my paper and to remove the question mark after the generic name, for these topotypes prove to be a typical *Oligostylus*.

<sup>1</sup> Received July 8, 1948.

<sup>2</sup> Journ. Washington Acad. Sci. 37: 284-288, 1947.